

CLAIMS

1. A method for preparing a polynucleotide comprising a nucleotide sequence having an activity of regulating the translation efficiency of a template in a protein synthesis system, characterized by: (a) supplying one or more types of template, comprising any nucleotide sequence, to a protein synthesis reaction system; (b) recovering a polyribosomal fraction from said reaction solution after the reaction; and (c) collecting a polynucleotide comprising said nucleotide sequence in the template contained in said polyribosomal fraction.
2. The method according to Claim 1, characterized in that said steps (a) to (c) are repeated using a template comprising the nucleotide sequence obtained in step (c).
3. The method according to Claim 1, characterized in that said steps (a) to (c) are repeated using a template comprising a sequence wherein a mutation has been introduced into the nucleotide sequence obtained in step (c).
4. The method according to any of Claim 1 to Claim 3, characterized in that density gradient centrifugation is used in the method for recovering the polyribosomal fraction,
5. The method according to any of Claim 1 to Claim 4, wherein the protein synthesis system is a cell-free protein synthesis system using wheat germ extract.
6. The method according to any of Claim 1 to Claim 5, characterized in that the one or more types of any nucleotide sequence are random sequences that do not contain a start codon.
7. The method according to Claim 6, characterized in that the length of the random sequence is in the range of 3 mer to 200 mer.
8. The method according to any of Claim 1 to Claim 7, characterized in that the method is a method for preparing a polynucleotide comprising a nucleotide sequence having translation enhancement activity.
9. The method according to Claim 8, characterized in that the translation enhancement activity is equal to or greater than the activity of a 5' non-translated leader sequence of an RNA virus.
10. A polynucleotide obtained by the method according to any of Claim 1 to Claim 9, having the activity of regulating translation efficiency.

11. A polynucleotide having translation enhancement activity, comprising the nucleotide sequence set forth in any of SEQ ID NO: 11 to 135.
12. A polynucleotide having an activity of regulating translation efficiency, comprising an artificial random nucleotide sequence of a length of 3 mer to 200 mer.
13. The polynucleotide according to Claim 12, characterized in that the activity of regulating translation efficiency is equal to or greater than the activity of a 5' non-translated leader sequence of an RNA virus.
14. A template comprising the polynucleotide according to any of Claim 9 to Claim 13.
15. A protein synthesis method, characterized by the use of the template according to Claim 14.
16. A vector comprising the polynucleotide according to any of Claim 9 to Claim 13.
17. A method for screening for a nucleotide sequence having an activity of regulating the translation efficiency of a template in a protein synthesis system, characterized by: (a) supplying one or more types of template comprising any nucleotide sequence to a protein synthesis reaction system; (b) recovering a polyribosomal fraction from said reaction solution after the reaction; and (c) analyzing said nucleotide sequences in the template contained in said polyribosomal fraction.
18. The method according to Claim 17, characterized in that said steps (a) to (c) are repeated using a template comprising the nucleotide sequence obtained in step (c).